

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

NO. 2 11 DEC 2004

PCT

To:

see form PCT/ISA/220

17/2.

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/US2004/025375

International filing date (day/month/year)
04.08.2004

Priority date (day/month/year)
05.08.2003

International Patent Classification (IPC) or both national classification and IPC
H04Q7/38, H04L1/00

Applicant
QUALCOMM INCORPORATED

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☒ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/US2004/025375

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
☐ a sequence listing
☐ table(s) related to the sequence listing
 - b. format of material:
☐ in written format
☐ in computer readable form
 - c. time of filing/furnishing:
☐ contained in the international application as filed.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/US2004/025375

Box No. II Priority

1. ☒ The following document has not been furnished:

- ☒ copy of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(a)).
☐ translation of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(b)).

Consequently it has not been possible to consider the validity of the priority claim. This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.

2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43*bis*.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.
3. ☐ It has not been possible to consider the validity of the priority claim because a copy of the priority document was not available to the ISA at the time that the search was conducted (Rule 17.1). This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.
4. Additional observations, if necessary:

Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-63
	No: Claims	
Inventive step (IS)	Yes: Claims	1-63
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-63
	No: Claims	

2. Citations and explanations

see separate sheet

Re Item V

Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations supporting such statement

1. The following document cited in the International Search Report is referred to in this communication:

D1: YOUNG-JOO SONG ET AL: "Rate-control snoop : a reliable transport protocol for heterogeneous networks with wired and wireless links" IEEE PROCEEDINGS 2003, vol. 2, 16 March 2003 (2003-03-16), pages 1334-1338, XP010639961

2. Statements with respect to novelty and inventive step, Art. 33(2),(3) PCT.

The present invention relates to combined acknowledgement and rate control in a wireless communication system. In particular, the invention relates to a base station method for rate control (independent **claims 23, 24, and 55**), a base station apparatus (independent **claims 1, 6, 19, and 54**) and a computer readable media (independent **claims 60 and 61**) supporting the method, a remote station method for rate control (independent **claims 40, 41, 56, 57**), a remote station apparatus (independent **claims 10, 20, and 54**) and a computer readable media (independent **claims 62 and 63**) supporting the method, and to a wireless communication system (independent **claims 21, 22, 58, and 59**) supporting the base and remote station rate control method.

The closest prior art is considered to be represented by the document **D1**.

D1 is also related to combined acknowledgement and rate control in a wireless communication system and discloses the feature of inserting a rate control command into an acknowledgement message.

However, neither **D1** nor any other referenced prior art document indicates generating a message comprising an acknowledgement and a rate control indicator.

The technical problem addressed by the present invention is to provide an alternative method for combined acknowledgement and rate control.

The present invention solves the above-mentioned technical problem by a base

station sending a first and a second message to a remote station, wherein the first message comprises an acknowledgement and a rate control indicator and the second message comprises a rate control command.

The solution of the present invention, as disclosed by the subject-matter of independent **claims 1, 6, 10, 19-24, 40, 41, and 54-63** is neither taught or suggested by **D1** nor by any of the further available prior art references either alone or in combination.

Moreover, the solution is considered as being not obvious for a skilled person. Hence, the subject-matter of independent **claims 1, 6, 10, 19-24, 40, 41, and 54-63** is considered to be both novel and inventive over the prior art. Consequently, the subject-matter of dependent **claims 2-5, 7-9, 11-18, 25-39, and 42-53**, which refer to said independent claims, is also considered to be both novel and inventive.

3. The subject-matter of **claims 1-63** is industrial applicable.
4. Remarks concerning formal deficiencies of the application

When entering PCT phase II (examination phase) the Applicant should consider the following formal requirements:

When filing new or amended claims the Applicant is reminded to consider the following formal requirements:

- a) Any new independent claims should be filed in the two-part form recommended by Rule 6.3(b) PCT (e.g. clearly identifying the beginning of the characterizing portion of the claim by the keyword "characterized") having a characterizing portion which correctly reflects the prior art document **D1**.
- b) Document **D1**, which appears to represent the most relevant prior art, should be acknowledged in the description (Rule 5.1(a)(ii) PCT).
- c) The description should be adapted to the wording of the newly filed claims (Rule 5.1(a)(iii) PCT).
- d) All claims should include reference signs in parentheses relating to the technical features referred therein (Rule 6.2(b) PCT).
- e) According to the requirements of Rule 11.13(I), (m) PCT reference signs not appearing in the description shall not appear in the drawings , and vice

versa. This requirement is not met in view of the reference signs 855, 865, 870, and 890 of fig. 8 and the description page 35, par. 136, to page 39, par.155, referring to fig. 8.

- f) Finally, care should be taken during revision, especially of the introductory portion of the description and of any statements of problem or advantage, not to add subject-matter which extends beyond the content of the application as originally filed (Art. 34(2)(b) PCT).

5. Remarks concerning clarity of the application

When entering PCT phase II (examination phase) the Applicant should consider the following deficiencies of the application:

Claims 1, 2, 6, 7, 9-12,17-19, 20-24, 36, 39-42, 44, 45, 49-52, 54, 55-63 do not meet the requirements of Art. 6 PCT for the following reasons:

- a) The group of **claims 1,6,19,54** and **claims 10,20,54** and **claims 21,22,58,59** and **claims 23,24,55** and **claims 40,41,56,57** and **claims 60,61** and **claims 62,63** have been drafted as separate independent claims. However, the group of **claims 1,6,19,54** and **claims 10,20,54** and **claims 21,22,58,59** and **claims 23,24,55** and **claims 40,41,56,57** and **claims 60,61** and **claims 62,63** appear to relate effectively to the same subject-matter, in particular if taken with their respective dependent claims, and to differ from each other only in respect of the terminology or wording used for the features of their subject-matter. Hence, the embodiments disclosed by said claims could have been easily formulated as one independent claim and dependent claims as appropriate.
- Under Art. 6 PCT in combination with Rule 6.1(a) PCT an undue multiplicity or duplicity of claims is considered as not complying with requirement of conciseness of the claims in their entirety, see Guidelines 5.42. To overcome this objection the Applicant is requested to file an amended set of claims which complies with Art. 6 PCT and Rule 6.1(a) PCT.
- b) It is clear from the description of the present application, in particular to page 35, par. 136, to page 39, par. 155, that the following features are essential to the performance of a base station or base station apparatus of the invention in accordance with the present application:

- 1) generating a first message comprising an acknowledgement indicator and a rate control indicator
- 2) generating a second message conditioned on the rate control indicator
- 3) the second message comprises a rate control command

Since **claims 1 and 19** do not contain feature 3) said claims do not meet the requirements following from Art. 6 PCT that any independent claim must contain all the technical features essential to the performance of the invention, see Guidelines 5.29 and 5.33.

- c) It is clear from the description of the present application, in particular page 35, par. 136, to page 39, par. 155, that the following features are essential to the performance of a remote station or remote station apparatus of the invention in accordance with the present application:

- 1) receiving a first message comprising an acknowledgement indicator and a rate control indicator
- 2) receiving a second message conditioned on the rate control indicator
- 3) the second message comprises a rate control command

Since **claims 10 and 20** do not contain feature 3) said claims do not meet the requirements following from Art. 6 PCT that any independent claim must contain all the technical features essential to the performance of the invention, see Guidelines 5.29 and 5.33.

- d) It is clear from the description of the present application, in particular page 35, par. 136, to page 39, par. 155, that the following features are essential to the performance of a system in accordance with the present application:

- 1) a message generator for generating a first message comprising an acknowledgement indicator and a rate control indicator and for generating a second message conditioned on the rate control indicator
- 2) the second message comprises a rate control command
- 3) a receiver for receiving a first message and conditionally receiving the second message in accordance with the rate control indicator

Since **claims 21 and 58** do not contain features 2) and 3) and **claims 22**

and 59 do not contain features 1) and 2) said claims do not meet the requirements following from Art. 6 PCT that any independent claim must contain all the technical features essential to the performance of the invention, see Guidelines 5.29 and 5.33.

- e) **Claim 6** discloses the features of "... generating a first signal comprising one of a plurality of values, each value associated with an acknowledgement ACK or negative acknowledgement NAK, and one or more of the values indicating a rate control command ...".

With reference to the description, in particular to page 35, par. 136, to page 39, par. 155, the disclosed feature of a first signal comprising one value associated with a negative acknowledgement NAK and one or more of the values indicating a rate control command is not supported by the description, see Guidelines 5.43.

To overcome this objection the Applicant is suggested to amend the wording of **claim 6** accordingly.

The same objection applies to **claims 23, 40, 54, 56, 58, 59, 60, and 62** accordingly.

- f) The term "associated with" used in **claims 6, 23, 40, 54, 56, 58, 59, 60, and 62** is vague and unclear and leaves the reader in doubt as to the meaning of the technical features to which it refers, thereby rendering the definition of the subject-matter of said claim unclear, see Guidelines 5.31.

Therefore, the term "associated with" should be replaced by the term "indicating" with reference to the description.

- g) **Claims 1, 2, 19, and 21** use the technical terms "first message" and "second message", **claims 10-12, 17, 18, 20, 22-24, 36, 40-42, 44, 45, 49-52, 54, and 55-63** use the terms "first signal" and "second signal", which renders said claims unclear, see Guidelines 5.31.

For the purpose of the examination, it is assumed that the above listed different technical terms relate in fact to the same technical features, with reference to the description, namely to a first and a second message.

To overcome this objection the Applicant is requested to check the set of claims for a consistent terminology and correct accordingly, see Guidelines 5.31.

- h) **Claim 60** is directed to a computer readable media and, according to its present wording, discloses that said computer readable media is operable to perform method steps, which renders said claim unclear for a skilled person, since computer readable media are not operable to perform any method steps.

To overcome this objection the Applicant is suggested to amend the wording of said claim accordingly (e.g. "Computer readable media comprising instructions that when executed perform the following steps: ...").

The same objection applies to **claims 61-63** accordingly.

- i) The apparatus of **claim 9** is specified in terms of functions it performs and operations it carries out rather than in terms of the apparatus itself ("... the message generator further generates a grant message ...").

Hence, **claim 9** contains a mixture of method and apparatus features .

As a consequence, it is not clear to which category (method or apparatus) **claim 9** should be ascribed, thereby rendering the scope of protection conferred by this claim unclear, see Guidelines 5.12.

To overcome this objection the Applicant is suggested to amend the wording of the claim accordingly (e.g. "... the message generator is further operable to generate a grant message ...").

The same objections applies to **claims 17 and 18** accordingly.

- j) It seems that dependent **claim 39** contains an erroneous reference to a claim to which said claim refers.
- k) It seems that in **claim 7** a word is missing and that said claim should correctly read " ... a transmitter for transmitting the first signal and conditionally transmitting the second signal. ".

In addition, to comply with the requirements of the Guidelines, 5.30, the Applicant is requested to delete the expression " ... from the spirit of .." of the description page 48, par. 190.